

WHAT IS CLAIMED IS:

1. A diagnosing device for a stereo camera mounted on a robot, said device comprising:

a flat surface portion on which texture for stereo camera diagnosis is provided; and

an indicator disposed on said surface portion for indicating the positional relation between said robot and said surface portion.

2. A stereo camera diagnosing device according to Claim 1,

wherein said robot includes a ground-contact portion for contact with a floor face; and

wherein said indicator indicates a place on said surface portion where said ground-contact portion of said robot is placed.

3. A stereo camera diagnosing device according to Claim 1,

wherein said robot includes one or more mobile legs including a foot; and

wherein said indicator indicates a place on said surface portion where the soles of feet of said robot are placed.

4. A stereo camera diagnosing device according to Claim 1, wherein said stereo camera diagnosing device has a folding structure, which becomes a flat shape exposing said surface portion at the time of unfolding said folding structure.

5. A stereo camera diagnosing device according to Claim 1, wherein said surface portion includes texture within a template, which can correctly perform matching on an epipolar line in the event of a stereo camera system using template matching.

6. A stereo camera diagnosing device according to Claim 1, wherein said surface portion includes texture which allows avoiding mismatching in diagnosis and calibration.

7. A stereo camera diagnosing device according to Claim 1, wherein said surface portion has patterns shaded in uniform texture.

8. A stereo camera diagnosing device according to Claim 1, wherein said surface portion includes calibration patterns of which geometrical shape is known.

9. A method for diagnosing a stereo camera mounted on a robot apparatus, said method comprising:

a step for causing said robot apparatus placed on a diagnostic mat having a predetermined texture to assume a stance suitable for taking an image of the diagnostic mat;

a step for creating a distance image based on the image acquired by said stereo camera;

a step for detecting the flat face of said diagnostic mat from said created distance image; and

a step for measuring the flatness of said detected flat face, and verifying the performance of a stereo camera according to whether or not the flatness is greater than a standard flatness.

10. A method for diagnosing a stereo camera mounted on a robot apparatus according to Claim 9, wherein, in said step for verifying the performance of said stereo camera, the mathematical expression for the flat face making up said diagnostic mat based on said created distance image is obtained, and determination is made whether or not said flatness is greater than a standard flatness based on the deviation of the distance between each point on said diagnostic mat and said flatness.

11. A method for diagnosing a stereo camera mounted on

a robot apparatus, said method comprising:

- a step for causing said robot apparatus placed on a diagnostic mat having predetermined texture to assume a stance suitable for taking an image of said diagnostic mat;

- a step for creating a distance image based on the image acquired by said stereo camera;

- a step for obtaining a transformation expression to a camera coordinates system on the basis of a floor coordinates system by solving the kinematics of joints of said robot apparatus, and obtaining the mathematical expression of the flat face of a floor face on the basis of the camera coordinates system and said transformation expression; and

- a step for comparing a distance value from said stereo camera with a flat face due to kinematics so as to diagnose said stereo camera.

12. A method for diagnosing a stereo camera mounted on a robot apparatus, said method comprising:

- a step for causing said robot apparatus placed on a diagnostic mat shaded in uniform texture thereof to assume a stance suitable for taking an image of said diagnostic mat;

- a step for creating a distance image based on the image acquired by said stereo camera; and

- a step for comparing a distance value around said

shaded portion with a standard flat face so as to diagnose said stereo camera based on the difference between both.

13. A method for diagnosing a stereo camera mounted on a robot apparatus, said method comprising:

a step for causing said robot apparatus placed on a diagnostic mat having texture including a predetermined template to assume a stance suitable for taking an image of said diagnostic mat;

a step for acquiring a standard camera image and detected camera image using said stereo camera;

a step for searching for a template within said standard camera image along an epipolar line within said detected camera image, and obtaining a matching score representing a correlation value for each template along said epipolar line; and

a step for determining the offset of said epipolar line based on the compared results between said matching score value and a standard value.

14. A method for diagnosing a stereo camera mounted on a robot apparatus, said method comprising:

a step for causing said robot apparatus placed on a diagnostic mat having texture including a predetermined template to assume a stance suitable for taking an image of

said diagnostic mat;

a step for acquiring images required for calibration in said stereo camera; and

a step for calculating the calibration parameters of said stereo camera using the acquired multiple images.

15. A method for diagnosing a stereo camera mounted on a robot apparatus according to any one of Claims 9, 11, 12, 13, and 14,

wherein said step for causing said robot apparatus to assume a stance suitable for taking an image of said diagnostic mat comprises

a step for searching for the visual line direction of said stereo camera such that said texture fits in the region to be diagnosed within an image taken by said stereo camera; and

a step for adjusting the size of the region to be diagnosed within an image taken by said stereo camera such that said texture covers the size in the visual line direction of said stereo camera.